

CLAIMS

What is claimed is:

- 1 1. A method for representing a root bus, comprising:
 - 2 creating a globally unique identifier (GUID) for the root bus;
 - 3 defining an object-oriented abstraction corresponding to the root bus
 - 4 comprising a set of components that includes reference to one or more methods
 - 5 that may be implemented to obtain and/or generate configuration and resource
 - 6 allocation information for the root bus and any subordinate busses connected
 - 7 either directly or indirectly to the root bus; and
 - 8 registering the methods referenced in the object-oriented abstraction.
- 1 2. The method of claim 1, wherein the object-oriented abstraction
 - 2 comprises one of a C++ object or Java object.
- 1 3. The method of claim 1, wherein the root bus comprises a PCI bus.
- 1 4. The method of claim 1, further comprising enumerating the root bus
 - 2 and said any subordinate busses through use of the methods that are registered.
- 1 5. The method of claim 4, further wherein the set of components of the
 - 2 object-oriented abstraction include at least one variable for storing information,
 - 3 further comprising storing configuration information derived during enumeration
 - 4 of the root bus into said at least one variable.

1 6. The method of claim 5, further comprising allocating resources for the
2 root bus, each subordinate bus, and any devices attached to those root and
3 subordinate busses; and
4 storing information corresponding to resources that are allocated in said at
5 least one variable for storing information.

1 7. The method of claim 1, wherein functions of the root bus are
2 controlled, at least in part, by a chipset having a plug-in driver, further comprising
3 interrogating the plug-in driver to identify said plurality of methods.

1 8. The method of claim 1, wherein functions of the root bus are
2 controlled, at least in part, by a chipset having a plug-in driver, further comprising
3 publishing the object-oriented abstraction via the plug-in driver.

1 9. A method for defining resource configuration information in a system
2 that includes a plurality of root busses, comprising:
3 identifying each of the plurality of root busses;
4 defining an object oriented representation of each root bus comprising a
5 set of components that includes references to a plurality of methods that may be
6 implemented to obtain and/or generate configuration and resource allocation
7 information for that root bus and any subordinate busses connected either directly
8 or indirectly to the root bus;

9 assigning a bus identifier for each of the subordinate busses through use of
10 an enumeration process that implements one or more of the methods referenced
11 by the object oriented representation of that root bus.

1 10. The method of claim 9, wherein the object oriented representation
2 includes a globally unique identifier (GUID) for each root bus.

1 11. The method of claim 10, further comprising:
2 creating a handle; and
3 storing references corresponding to the GUIDs for each root bus in the
4 handle.

1 12. The method of claim 11, wherein the handle further includes indicia
2 for each GUID identifying a location of the object oriented representation
3 corresponding to the GUID.

1 13. The method of claim 12, wherein the indicia comprises a pointer to
2 the memory address at which the object oriented representation is stored.

1 14. The method of claim 9, wherein each root bus and any subordinate
2 busses connected either directly or indirectly to the root bus form a hierarchy, and
3 wherein the enumeration process for each root bus comprises:
4 assigning bus identifiers as subordinate busses are reached while moving
5 downward through the hierarchy; and

6 calculating resource requirements for each subordinate bus while moving
7 back up the hierarchy.

1 15. The method of claim 9, further comprising:
2 determining resource requirements for each subordinate bus;
3 allocating the resource requirements for that subordinate bus; and
4 setting resources for that subordinate bus.

1 16. The method of claim 15, wherein at least one of the subordinate
2 busses for a given root bus has a peripheral device connected to it, and further
3 wherein determining the resource requirements for each subordinate bus includes
4 determining the resource requirements of any peripheral devices attached to that
5 subordinate bus.

1 17. The method of claim 15, further comprising:
2 allocating resources for each root bus based in part on the resources of its
3 subordinate busses; and
4 setting the resources for that root bus.

1 18. The method of claim 9, further comprising:
2 evaluating devices in the hierarchy of each root bus to determine if they
3 produce a firmware device or an optional ROM that may include BIOS
4 corresponding to a bootable device.

1 19. An article of manufacture comprising a computer-readable medium
2 having computer-executable instructions that when executed perform the
3 functions of:

4 creating a globally unique identifier (GUID) for the root bus;
5 defining an object-oriented abstraction corresponding to the root bus
6 comprising a set of components that includes reference to one or more methods
7 that may be implemented to obtain and/or generate configuration and resource
8 allocation information for the root bus and any subordinate busses connected
9 either directly or indirectly to the root bus; and
10 registering the methods referenced in the object-oriented abstraction.

1 20. The article of manufacture of claim 19, wherein the computer-
2 executable instructions comprises one or more software modules including a root
3 bus driver.

1 21. The article of manufacture of claim 19, wherein execution of the
2 instructions further performs the function of assigning a bus identifier for each of
3 the subordinate busses through use of an enumeration process that implements
4 one or more of the methods referenced by the object oriented representation of
5 that root bus.

1 22. The article of manufacture of claim 21, wherein the root bus and any
2 subordinate busses connected either directly or indirectly to the root bus form a
3 hierarchy, and wherein the enumeration process for the root bus comprises:

4 assigning bus identifiers as subordinate busses are reached while moving
5 downward through the hierarchy; and
6 calculating resource requirements for each subordinate bus while moving
7 back up the hierarchy.

1 23. The article of manufacture of claim 22, wherein execution of the
2 instructions further performs the functions of:
3 determining resource requirements for each subordinate bus;
4 allocating the resource requirements for that subordinate bus; and
5 assigning the resources that are allocated to the root bus that is a parent of
6 that subordinate bus.

1 24. The article of manufacture of claim 19, wherein execution of the
2 instructions further performs the functions of:
3 creating a handle; and
4 storing references corresponding to a GUID for the object-oriented
5 abstraction and a pointer to the object-oriented abstraction in the handle.